

FECFANOVA, Yu. M. Cand Geolog-Mineralog Sci

Dissertation: "Morphology and Stratigraphy of the Cheilostomata  
Neogene System of the Ponto-Caspian Basin." Moscow Order of the  
Labor Red Banner Petroleum Inst imeni Academician I. M. Gubkin  
10 Jun 47

SO: Vechernaya Moskva, Jun 1947 (Proj #17836)

YEOFANOVA, Yu.M.

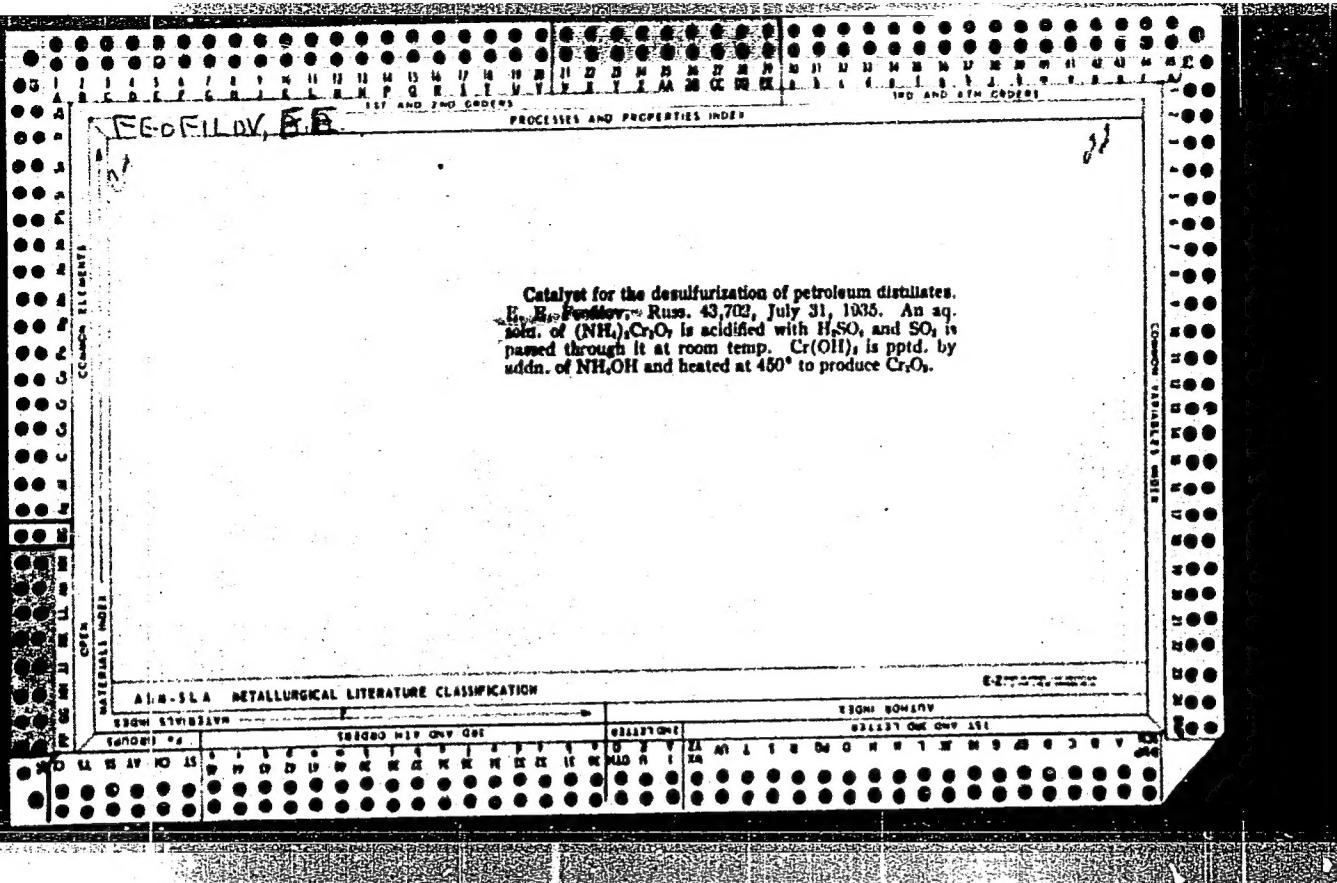
Study of upper Tertiary bryozoa of Moldavia and Crimea. Biul.MOIP. Otd.geol.  
28 no.3:42-63 '53. (MIRA 6:11)

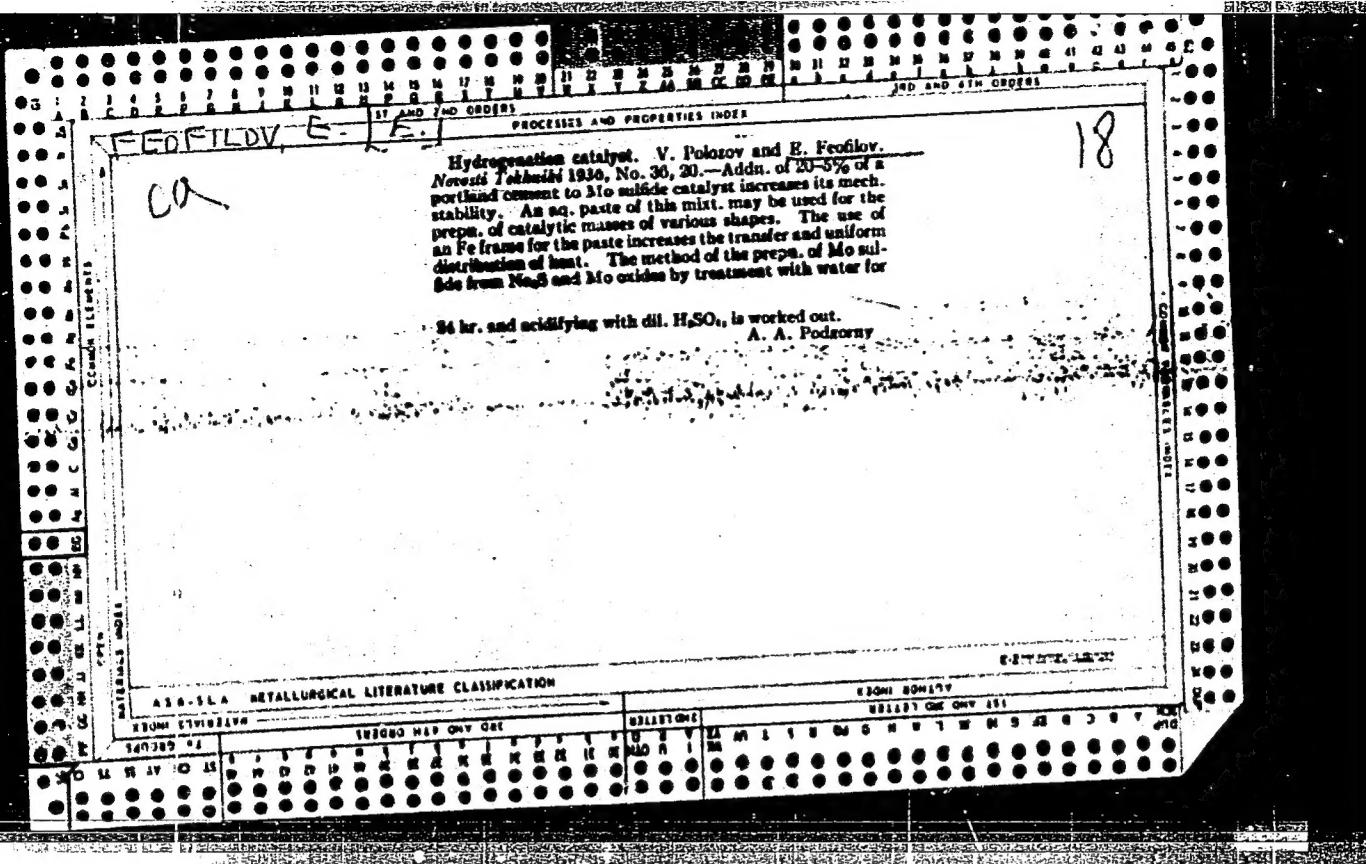
(Moldavia--Polyzoa, Fossil) (Polyzoa, Fossil--Moldavia)  
(Crimea--Polyzoa, Fossil) (Polyzoa, Fossil--Crimea)

FEOFANOVA, Yu.M.

New Paleogene Bryozoa of Fergana. Paleont. zhur. no.1:60-72  
'65. (MIRA 18:4)

1. Moskovskiy institut neftekhimicheskoy i gazovoy promyshlennosti  
imeni Gubkina.





"APPROVED FOR RELEASE: 08/23/2000

CIA-RDP86-00513R000412910009-5

FEOFILOV, E.E.

APPROVED FOR RELEASE: 08/23/2000

CIA-RDP86-00513R000412910009-5"

FEOFILOV, G.L.

Some notes on the nomenclature of bronchi and bronchopulmonary segments. Arkh. anat., gist. i embr. 48 no.5: 102-104 My '65.  
(MIRA 19:1)

1. Legochnoye otdeleniye (ispolnyayushchiy obyazannosti zav. -  
kand. med. nauk G.L. Feofilov) Instituta eksperimental'noy  
biologii i meditsiny Sibirskogo otdeleniya AN SSSR, Novosibirsk.  
Submitted January 31, 1963.

L 11933-66 EWT(1)/EWT(m)/T/EWP(t)/EWP(b)/EWA(c) IJP(c) JD/JG  
ACC NR: AP6001654 SOURCE CODE: UR/0051/65/019/006/0973/0975  
44 55 44 55 44 55  
AUTHOR: Zonn, Z. N.; Ioffe, V. A.; Feofilov, P. O.

ORG: none

TITLE: Luminescence of chromium and manganese ions in lanthanum aluminate crystals

SOURCE: Optika i spektroskopiya, v. 19, no. 6, 1965, 973-975

TOPIC TAGS: manganese, chromium, ion, lanthanum compound, single crystal, luminescence, aluminate

ABSTRACT: The authors discuss certain results of the study of the spectra and luminescence duration of isoelectronic ions  $\text{Cr}^{3+}$  and  $\text{Mn}^{4+}$  (electronic configuration  $3d^3$ ), introduced into the crystal lattice of  $\text{LaAlO}_3$ . Both monocrystals grown from a solution in a melt as well as powdered samples were considered. No difference in the spectroscopic characteristics of the monocrystals and powders was noted. Crystal luminescence, located in the red and near-infrared portions of the spectrum was excited by an SVDSh-250 mercury lamp through a light filter consisting of a  $\text{CuSO}_4$  solution, which had the effect of blocking the longwave portion of the energizing light. At small chromium concentrations

Card 1/2

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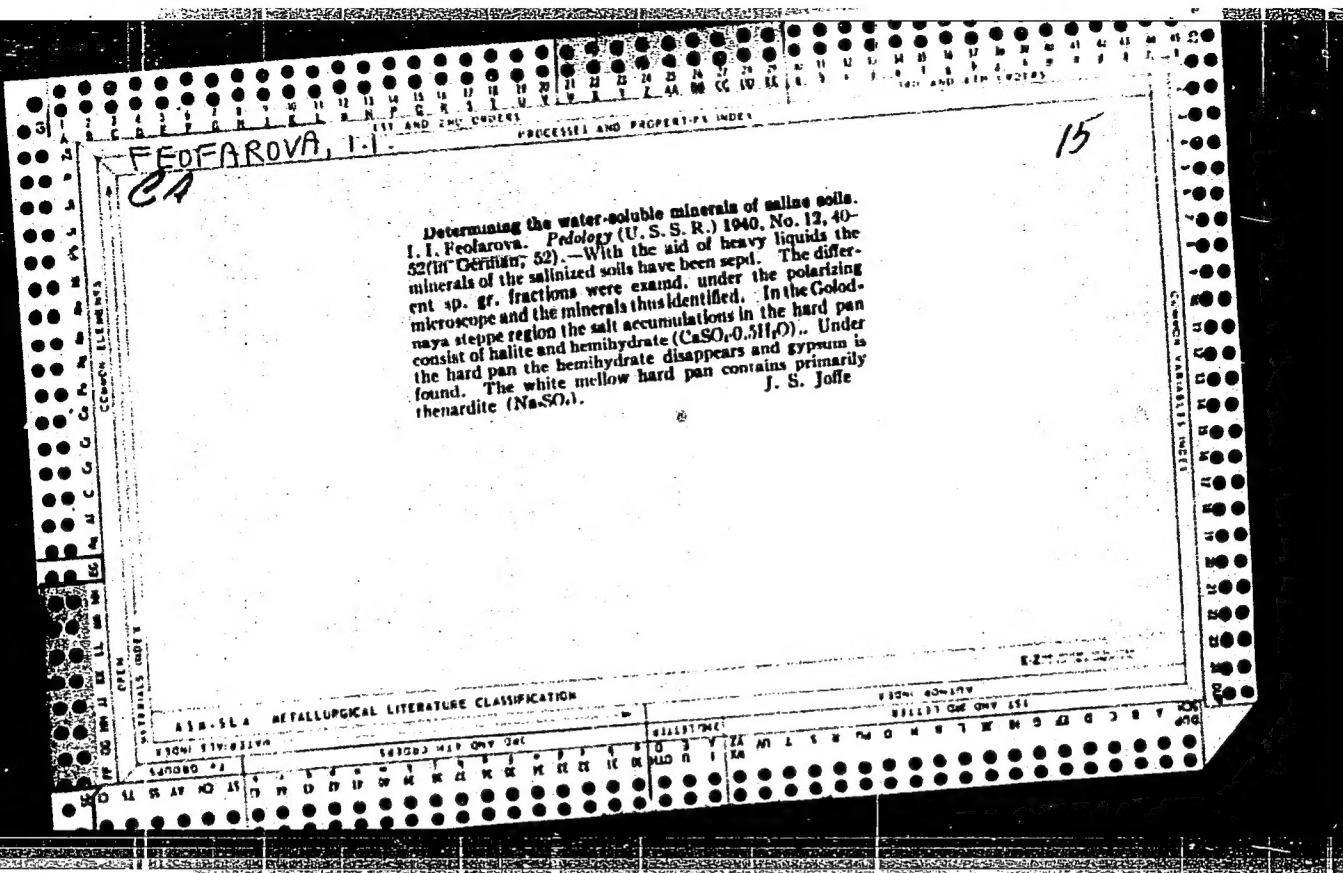
ACC NR: AP6001654

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R000412910009-5"

the luminescence spectrum consists practically of a doublet with wavelengths of 7335 and 7338 Å. When the  $\text{Cr}^{3+}$  concentration is increased to 0.5% and above, the form of the luminescence spectrum undergoes definite modifications, which are described. With concentrations amounting to several percent, luminescence of  $\text{Cr}^{3+}$  in  $\text{LaAlO}_3$  is entirely quenched. The luminescence spectra at different chromium percentages are illustrated. The luminescence is interpreted as a  $3E - 4A_2$  transition in the  $\text{Mn}^{4+}$  ion. Orig. art. has: 3 figures.

SUB CODE: 20 / SUBM DATE: 20Mar65 / ORIG REF: 003 / OTH REF: 008

OC  
Card 2/2



U FEOFAROVA, I.I.

Pseudomorphosis of calcite from gypsum in soils. I. I.  
Fedorova. Izdat. Pochvennogo Inst. im. V. V. Dokuchieva  
33, 202-6 (1950).—Field observations in the Bergan Valley  
(Transcaucasus) and lab. expts. to test the field observa-  
tions are reported. M. Horsch

CA FEOFAROVA, T.I.

12  
Aragonite in soils. I. I. Feofarova. *Trudy Pochvennogo*  
*Inst. im. V. V. Dokuchaeva* 34, 207-9 (1950). -- Finding of  
aragonite in certain soils of Transcaucasia is reported.  
M. Hsieh

Some data on the mineral composition of siliceous sprinkling in forest steppe soils. A. A. Rode and I. I. Fedorova. Pochvovedenie 1955, No. 9, 58-60.—The siliceous specks of a forest steppe soil were sep'd. from the soil mass by scraping them with a sharp rod. Analysis of this material in comparison with that of the soil shows a concn. of  $\text{SiO}_2$  in the specks or siliceous sprinkling, varying, resp., from 49 to 67% in the specks and from 39 to 48% in the soil. The feldspars (primarily orthoclase with some plagioclase) vary in the soil from 7 to 11% and in the specks from 11 to 14%. It is suggested that the mass of the specks represents the same material as that of the soil. However, the specks have lost their humus materials and clay aggregates. J. S. Jeffs.

AG

(1)

Feofarova, I. I.

USSR/Soil Science - Physical and Chemical Properties of Soils.

J-3

Abs Jour : Ref Zhur - Biol., No 3, 1958, 10491

Author : Feofarova, I.I.

Inst :

Title : A Micromorphological Characterization of the Takyry

Orig Pub : Takyry Zap. Turkmenii i puti ikh s.-kh. osvoyeniya, Moskva,  
Akad Nauk SSSR, 1956, 351-380

Abstract : A study of the structure of slides taken from various horizons of the takyry of the Kopet-Dagh mountain plain, using a polarized microscope, has disclosed the cellular character of takyr porosity, the presence of gelatine-like newly-formed "secondary clay" in the lower part of the takyr crust, and also the existence of /osolodeniye/ spots in its upper part. Finely dispersed forms of carbonates were shown to coat the walls of the closed pores; the presence of some decarbonatized spots was also discovered. The great mobility of organic substances in the takyry is noted.

Card 1/1

FEOFAROVA, I.I.

Sulfates in saline soils. Trudy pochv.inst. 52:89-103 '58.  
(MIRA 11:9)  
(Alkali lands) (Sulfates)

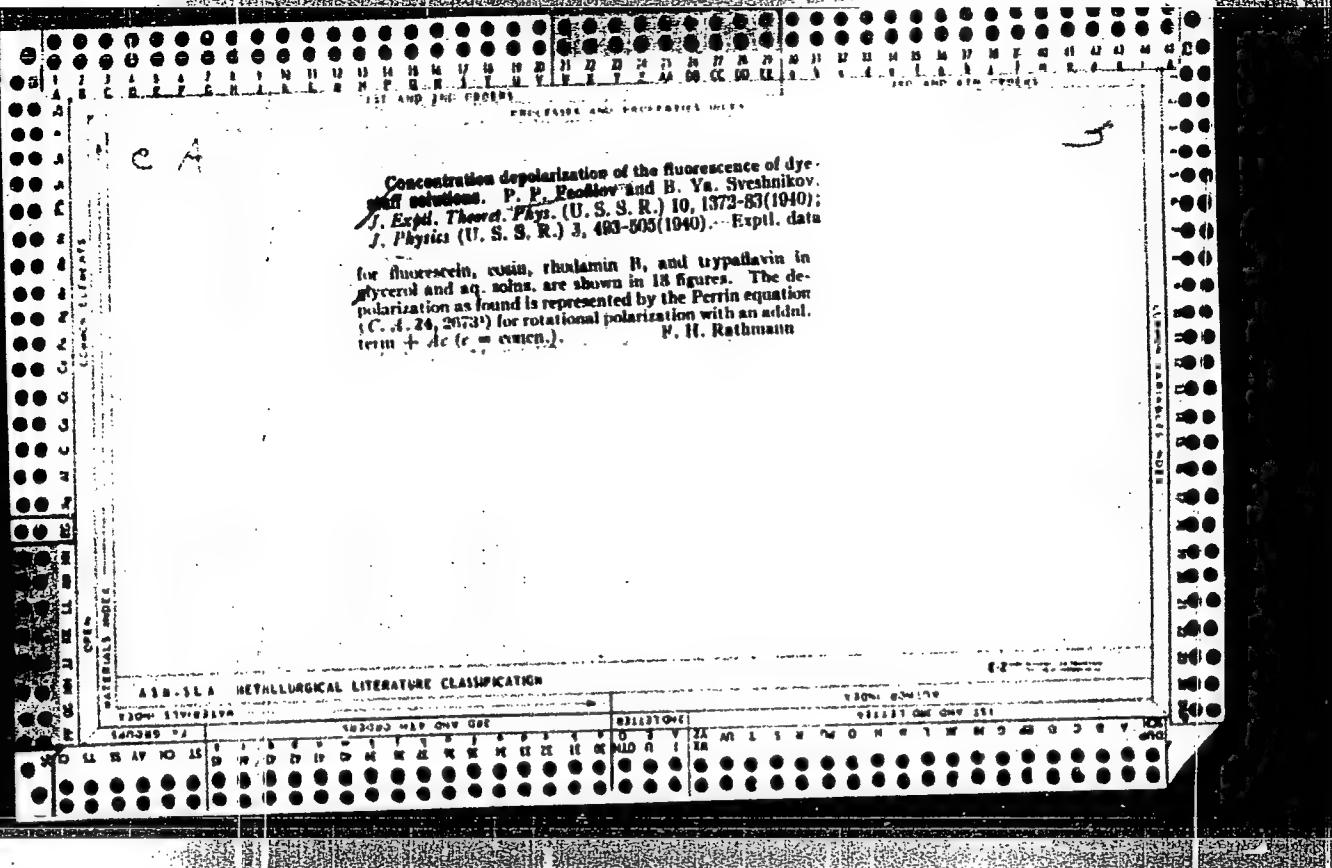
FEOFAROVA, I.I.

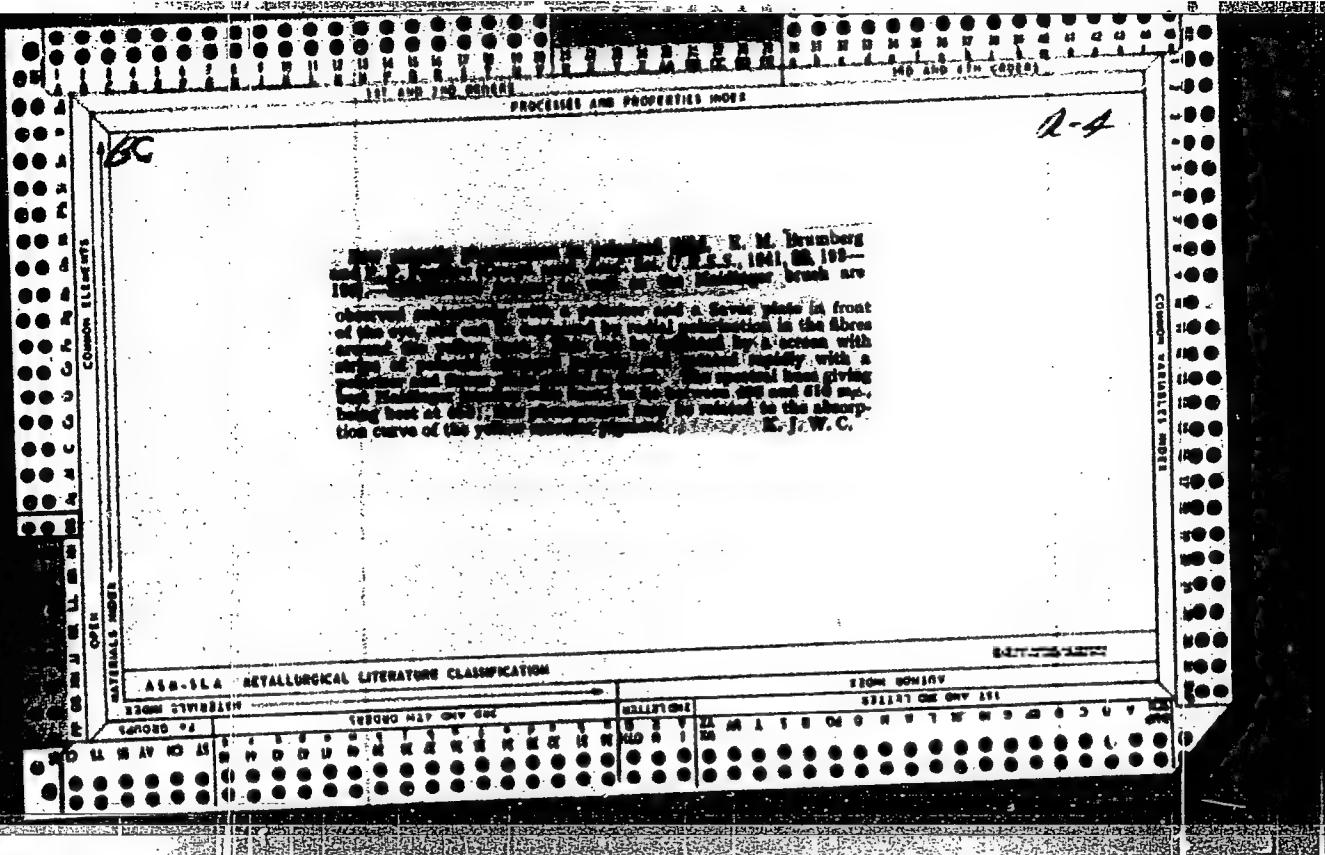
Applying the microscopic method for determining carbonates in  
saline soils. Trudy pochv. inst. 53:75-88 '58. (MIRA 11:9)  
(Alkali lands) (Carbonates)

ZONN, S.V.; FEOFAROVA, I.I.

New soil type under dark green conifer forests of eastern Tibet.  
Pochvovedenie no.6:11-20 Je '60. (MIRA 13:11)

1. Laboratoriya lesovedeniya Akademii nauk SSSR.  
(Tibet--Forest soils)





FEONILOV, P. P.

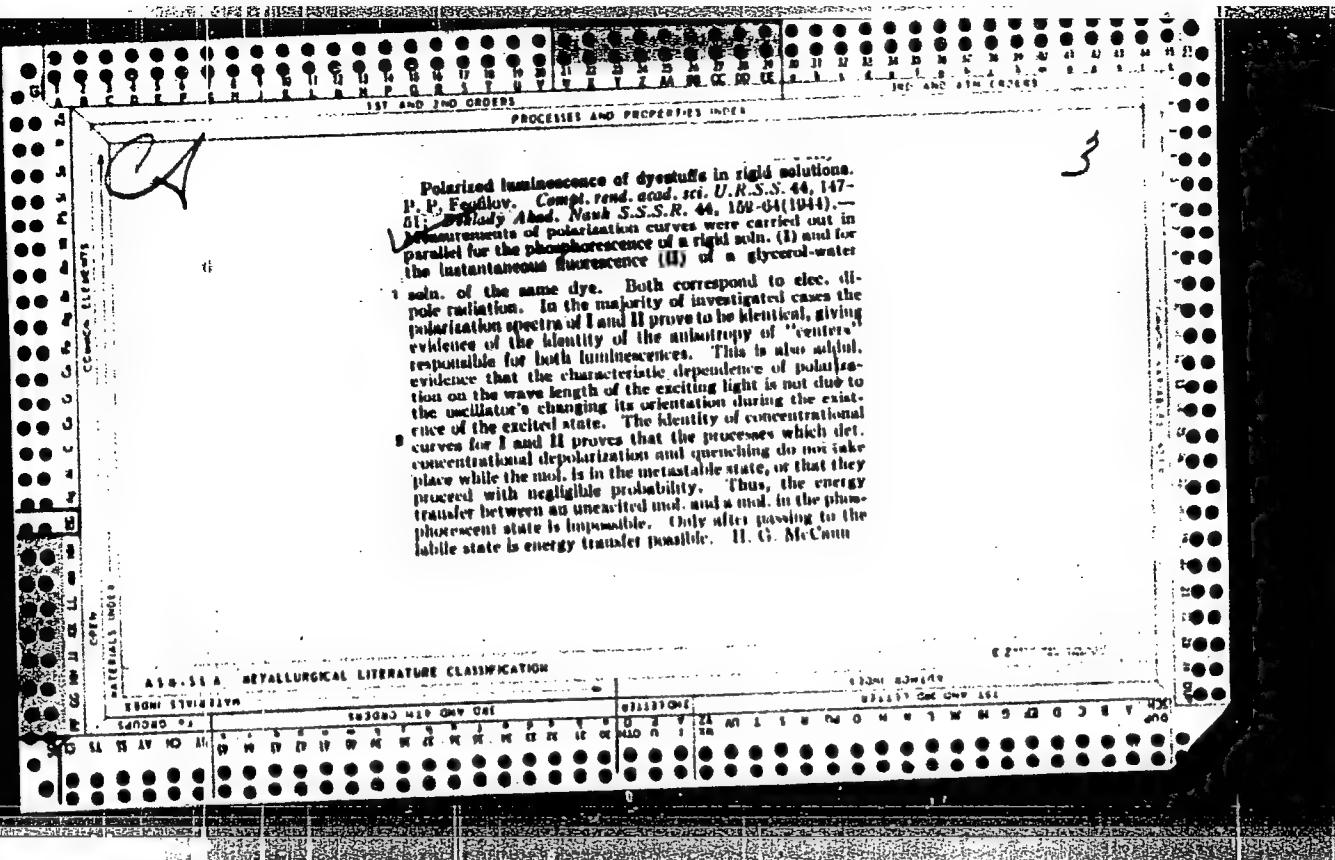
Inst. for Theor. Geoph., Acad. of Sci. USSR, Polucheno, (-1942-)

"Night Illumination and Spectral Composition of Night Light in Middle Latitudes,"

Iz. Ak. Nauk SSSR, Ser. Geograf. i Geofiz., Nos 1 - 6, 1942.

Theory of concentrational depolarization of fluorescence in solvents. S. I. Vavilov and P. P. Kapiton. *Compt. rend. Acad. Sci. U.R.S.S.*, 1948, **34**, 220-223).—The relation  $1/\rho' - 1/\rho = A\tau c$  ( $\rho'$ ,  $\rho$  = degree of polarization of fluorescence respectively with and without concn. depolarization;  $\tau$  = mean life of excited state;  $c$  = solute concn.;  $A$  const.) is deduced theoretically on the basis of excitation energy transfer by quantum-mechanical resonance.  
A. J. E. W.

13. 16-  
2. 11. 1970 2000 400  
Polarization of fluorescence and anisotropy of molecules of organic dyes. P. P. Franklin (*J. Physics U.S.S.R.*, 1942, 7, 68-79).—Curves showing the dependence of polarization of fluorescent light on the  $\lambda$  of the exciting light (polarization spectra) are obtained for rhodamine-B, Na fluorescein, Na eosin (I), trypanavine (II), acridine-orange (III), benzodavine (IV), Na perylene-tetracarboxylate, merulin, and pinakryloyl-yellow. These polarization spectra are sp. for each dye. For (I)-(IV) the variation of dichroism of oriented mol. with  $\lambda$  is investigated, and there is a correspondence between this and the polarization spectrum. This indicates that the angles between emitting and absorbing oscillators are not produced during the excitation, but are inherent in the mol. The anisotropy of the mol. can be interpreted by means of an oscillator model in which the fluorescing mol. is regarded as an emitting oscillator with a no. of absorbing oscillators rigidly coupled to it. A. J. M.



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PROCESSES AND PROCESSES WHICH

A-1

**Fluorescence of organic dyes as related to chemical constitution.**  
 P. P. Egorov (Compt. rend. Acad. Sci. U.R.S.S., 1946, **60**, 367-370).—Fluorescent action is observed when dyes the structure of which admits of relative rotation of two large mol. parts around the chain of conjugated double bonds responsible for the colour of the compound, are introduced into right solutions of sugar, plastics,  $H_2O_2$ , etc. Examples are di- and tri-phenylmethane dyes such as auramine, fuchsin, crystal-violet, and malachite-green, and cyanine dyes such as cyanine, dicyanine, and pinaventol. It is possible that some hindrance arises to preclude the relative rotation of 1<sup>h</sup> or some quinoline rings around the connecting chain of conjugated double bonds. This hindrance prevents the energy of excitation being converted into kinetic energy, and this view of fluorescence is preferred to the usual one in which fluorescence is ascribed directly to the presence of certain groupings.  
 C. R. H.

AMSLA METALLURGICAL LITERATURE CLASSIFICATION

KODAK SAFETY FILM

DATA SHEET

EX-1003 MAP ONLY ONE

COLLATION

EX-1003 MAP ONLY ONE

**PROCESSES AND PROPERTIES INDEX**

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## ASME-11A METALLURGICAL LITERATURE CLASSIFICATION

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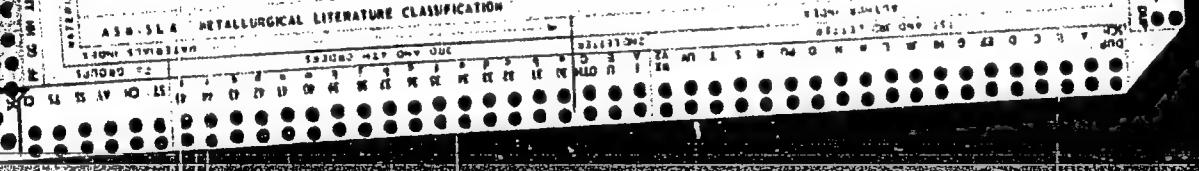
SECHENOV, A. N. : PEOFILOV, P. P.

Luminescent materials accepted in a military sense.

An article found in "Optics for Military Use", Part I, published by the  
USSR Academy of Science, Moscow, 1945.

*CJ*

Anisotropy of the molecule and the polarization of luminescence. I. P. Fedorov. *Bull. acad. sov. U.R.S.S., Ser. phys.*, v. 317, 27 (1955); cf. *C.I. 37*, 3347. Luminescent dyes, such as acridine orange, benzolavine, and acrilavine, were adsorbed on anisotropic films of cellophane. These films are dichroic; their polarization is small and independent of  $\lambda$  in ordinary light, higher and a function of wave length in polarized light. The curve of the dichroism as a function of  $\lambda$  has the same shape as the curve of the polarization. This indicates that the oscillators of absorption are different from, and form an angle with, the oscillators of light emission. The correlation of these electronic vibrations and the structure of the mol. was studied on glycerol or other viscous solns. of dyes. Their absorption spectra from 200 to 550 m $\mu$  were measured at the same time and the comparison of absorption and luminescent spectra showed that each band can be attributed to a separate oscillator. Curves of both spectra are given for the following 23 dyes: acridine yellow, coryphosphine, acrilavine, chrysanthine, acridine orange, benzolavine, rivanol, lucigenin, fluorescein, rhodamine GG, rhodamine B extra, phenosframine, eosine, pyronine C, rhodamine S, rhodamine red, rhodamine yellow TX, quinaline red, esenin, quinine sulfate, 3-aminophthalhydrazide, Na salt of polylenetetracarboxylic acid, Na salicylate. The structure of the polarization spectrum depends on the pH of the soln. The structure of the acridine spectrum is discussed.



FEOFILOV, P.P.

PA 50798

USSR / Physics

Luminescence

Light - Polarization

Feb 1947

"Nature of Elementary Emitters and the Polarization  
of Photoluminescence," P. P. FEOFILOV, Lab Lumines-  
cence, State Opt Inst, 4 pp.

"Comp Rend Acad Sci URSS" Vol IV, No 5

Vavilov has shown that the kind of multipolarity of  
elementary absorbing and emitting systems in the case  
of complicated luminescent molecules can be estab-  
lished by studying absorption and emission as function  
of the direction of the exciting light vector, and by

50798

USSR / Physics (Contd)

Feb 1947

observation. He has computed polarization diagrams  
for the four possible combinations of electric di-  
poles and quadrupoles and made it clear that the  
study of polarization diagrams permits definite de-  
cisions on the kind of multipolarity of elementary  
emitters. FEOFILOV extends Vavilov's considerations  
to the case of a magnetic dipole. Submitted by S. I.  
Vavilov, 19 Oct 1946.

KODAK

Structure of the absorption band of triphenylmethane dyes. P. P. Proofilov. Doklady Akad. Nauk S.S.R. 57, 447-50 (1947).—The method of polarization spectra is used to indicate that in the dyes with a nearly sym. structure the secondary abs. max. are detd. by the structures of the mols. which is different from the existence of an electronic shift band. Excitation of luminescence in the region of the long-wave absorption band gives the limiting polarization that is about 0.8 of the value calcd. for linear oscillators with coincident direction of oscillation, for all the previously studied dyes. Studies with fuchsin, parafuchsin, methyl violet, crystal violet, ethyl violet, alk. phenolphthalein, and malachite green showed that dyes with 2 auxochromes display polarization that is close to the limiting value and is essentially invariant in respect to frequency of exciting light; here the principal oscillator system must be coaxial with the line joining the 2 auxochromes; these dyes do not show a secondary abs. max. Dyes with 3 auxochromes display sharply with change of frequency of incident light within the limits of the absorption band; excitation with light of frequency corresponding to the long-wave edge of the band polarization is the same as cited above (40-5%), but with shorter waves the polarization falls off rapidly and may become neg. (abs. value 5-7%). G. M. Kosolapoff

PA 53T91

FEOFILOV, P. P.

USER/Physics  
Luminescent Materials  
Polarization

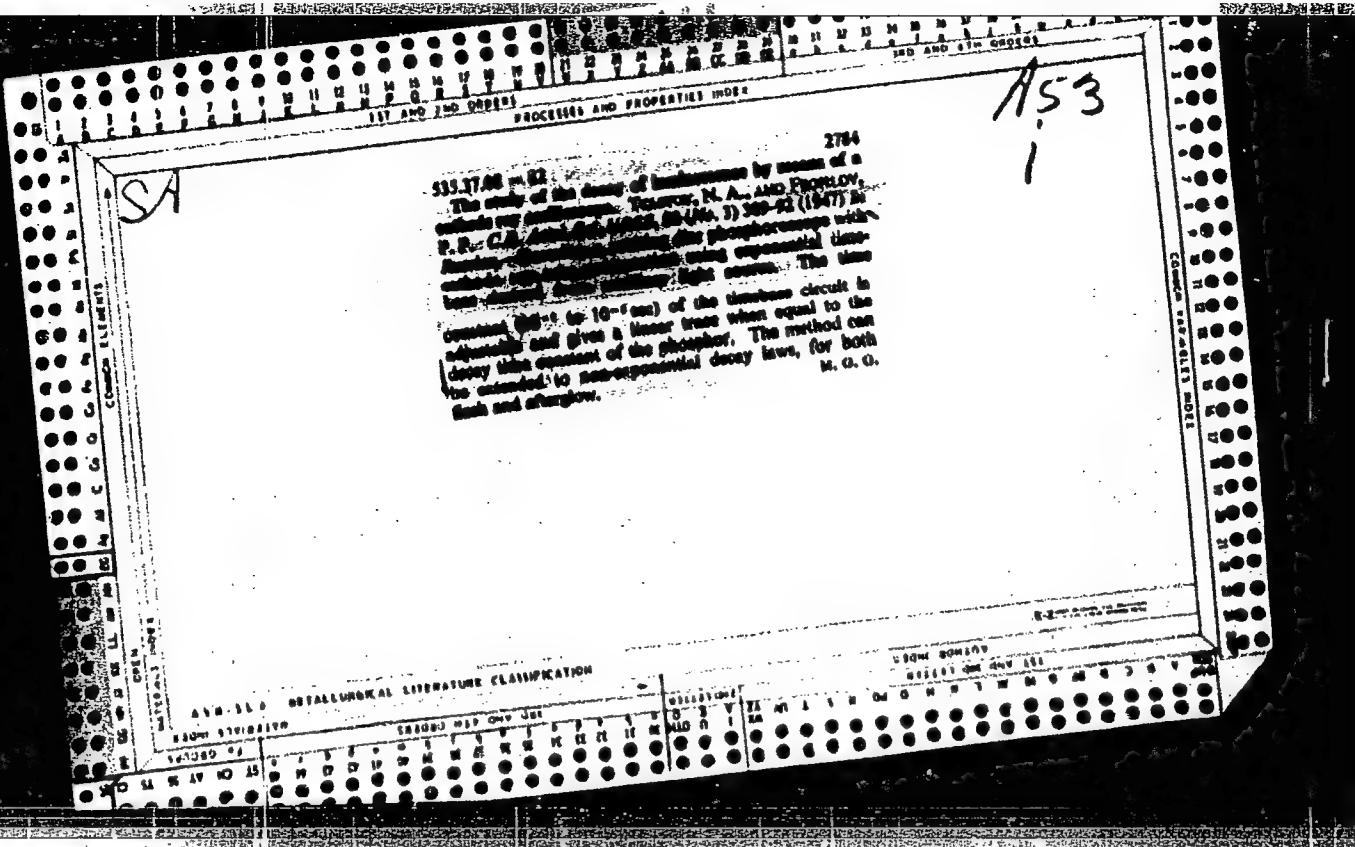
Aug 1947

"Polarization of Photoluminescence and the Symmetry of  
the Molecule," P. P. Feofilov, Luminescence Lab,  
State Optical Inst, 4 pp

"Dok Akad Nauk SSSR, Nova Ser" Vol LVII, No 4

Presents in tabular form polarization of luminescence  
of benzole derivatives, important because of increased  
use of organic dyes. Analysis of molecule structure  
of fluorescent dyes shows that majority of complex  
molecules can be isolated and divided in several ways.  
Submitted by Academician S. I. Vavilov, 30 Mar 1947.

53T91



FEOFILOV, P. P.

Apr 48

USSR/Physics  
Light - Measurements  
Optics, Physical

"One Possibility of an Equation of Depth of Modulation in the Kerr Effect," N. A. Tolstoy,  
P. P. Feofilov, State Opt Inst, 3 pp

"Dok Akad Nauk SSSR, Nova Ser" Vol LX, No 2

Describes fundamentals of method for measuring Kerr Effect. Presents method for  
calculating intensity of light passing through the analyzer. Submitted by Academician  
S. I. Vavilov, 18 Feb 1948.

PA 62T97

FEOFILOV, P. P.

USSR/ Physics  
· Luminescence  
Glass

11 Jan 1948

"Loss of Luminescence by Glass and Uranyl Salts" N. A. Tolstoy, P. P.  
Feofilov, Luminescence Lab, State Opt Inst, 4 pp

"Dok Akad Nauk SSSR, Nova Ser" Vol LIX, No 2

Presents some results of use of new method to study attenuation of luminescence. Gist of method is development of curve of intensity of luminescence according to the exponential law in time on screen of cathode oscilloscope. By varying the exponent of the converter, straight line produced on the screen, indicating identical nature of the law of attenuation of studied luminescence with the law of the converter. Submitted by Academician S. I. Vavilov, 9 Nov 1947.

PA 43/43T101

PA 48/49T98

FEOFILOV, P. P.

Dec 48

USER/Physics  
Luminescence  
Polarization

"Polarized Luminescence," P. P. Teofilov, 40 pp  
"Uspokhi Fiz Nauk" Vol XXVI, No 4

Treats under: (1) Polarized luminescence as a result of anisotropy of the molecule, (2) observations on and measurements of polarized luminescence, (3) rotating depolarization and some problems of the theory of the liquid state, (4) concentrated depolarization and (5) exchange of energy of excitation, and (6) polarization of luminescence and structure of the boundary polarization of luminescence and symmetry of the molecule.

Dec 48

USER/Physics (Contd)

Molecule. Under (5), author discusses: (a) nature of elementary radiations and polarization diagrams, (b) polarized spectra and relative disposition of molecular oscillators, and (c) disposition of luminescence and symmetry of the molecule.

48/49T98

FEOFILOV, P.

PA 48/49T93

USSR/Physics  
Academy of Sciences  
Luminescence

Dec 48

"Second All-Union Conference on Luminescence,"  
P. Feofilov, 10 pp

"Uspkhi Fiz Nauk" Vol XXXVI, No 4

Session convened 17 - 22 May in Moscow. Discussed various problems of luminescence and illumination engineering. Vavilov summarized development of this science. Terenin reported on "Quenching of Photoluminescence and Metastable States." Feofilova discussed polarized luminescence and structure of the molecule. Vavilov

48/49T93

also submitted a report on experimental observation of migrations of the exciting energy in fluorescent solutions. 48/49T93

ANDRONNIKOV, K.S.; BALAKOV, V.V.; BUZHINSKIY, A.N.; BURAGO, A.N.; VENTMAN, L.A.; VISHNEVSKIY, A.A.; VOLOSOV, D.S.; GASSOVSKIY, L.N., professor; GERSHUN, A.A., professor; YEL'YASHEVICH, M.A.; YEVSTROP'YEV, K.S.; GUREVICH, M.M., professor; KOLYADIN, A.I.; KORYAKIN, B.M.; KURITSKIY, A.L.; PAPIYANTS, K.A.; PROKOF'YEV, V.K., professor; PUTSEYKO, Ye.K.; REZUNOV, M.A.; RITYN', N.B.; SAVOST'YANOVA, M.V., professor; SEVCHENKO, A.N.; SENNOV, N.I.; STOZHAROV, A.I.; FAYERMAN, G.P., professor; FEDOROV, P.D.; TSAREVSKIY, Ye.N., professor; CHEKHMATAYEV, D.P.; YUDIN, Ye.F.; KAVRAYSKIY, V.V., professor; VAVILOV, S.I., akademik, redaktor

[Optics in military science] Optika v voennom delе; sbornik statei.  
Pod red. S.I.Vavilova i M.V.Savost'yanovo. Izd. 3-e, zanovo perer.  
(MIRA 9:9)  
i dop. Moskva. Vol.2. 1948. 387 p.

1. Akademiya nauk SSSR. 2. Sostaviteli - sotrudniki Gosudarstvennogo Opticheskogo instituta (for all except Vavilov and Kavrayskiy)  
3. Voyenno-morskaya akademiya (for Kavrayskiy)  
(Optics)

PA 36/49193

FEOFILOV, P. P.

DSRR/Physics  
Luminescence

Molecular Structures

"Luminescence Polarization and Molecular Structure," P. P. Feofilov, State Opt Inst, 10 pp  
"IZ Ak Nauk SSSR, Ser Fiz" Vol XIII, No 1

Approached study of molecular structure by investigating luminescence polarization, in particular, by: (1) polarization diagrams indicating spatial distribution of luminescence polarization, (2) polarization spectra, i.e., curves of observed polarization versus wave length of exciting light, and (3) boundary values for degree of polarization, i.e., values observed when all known depolarizing factors were eliminated.

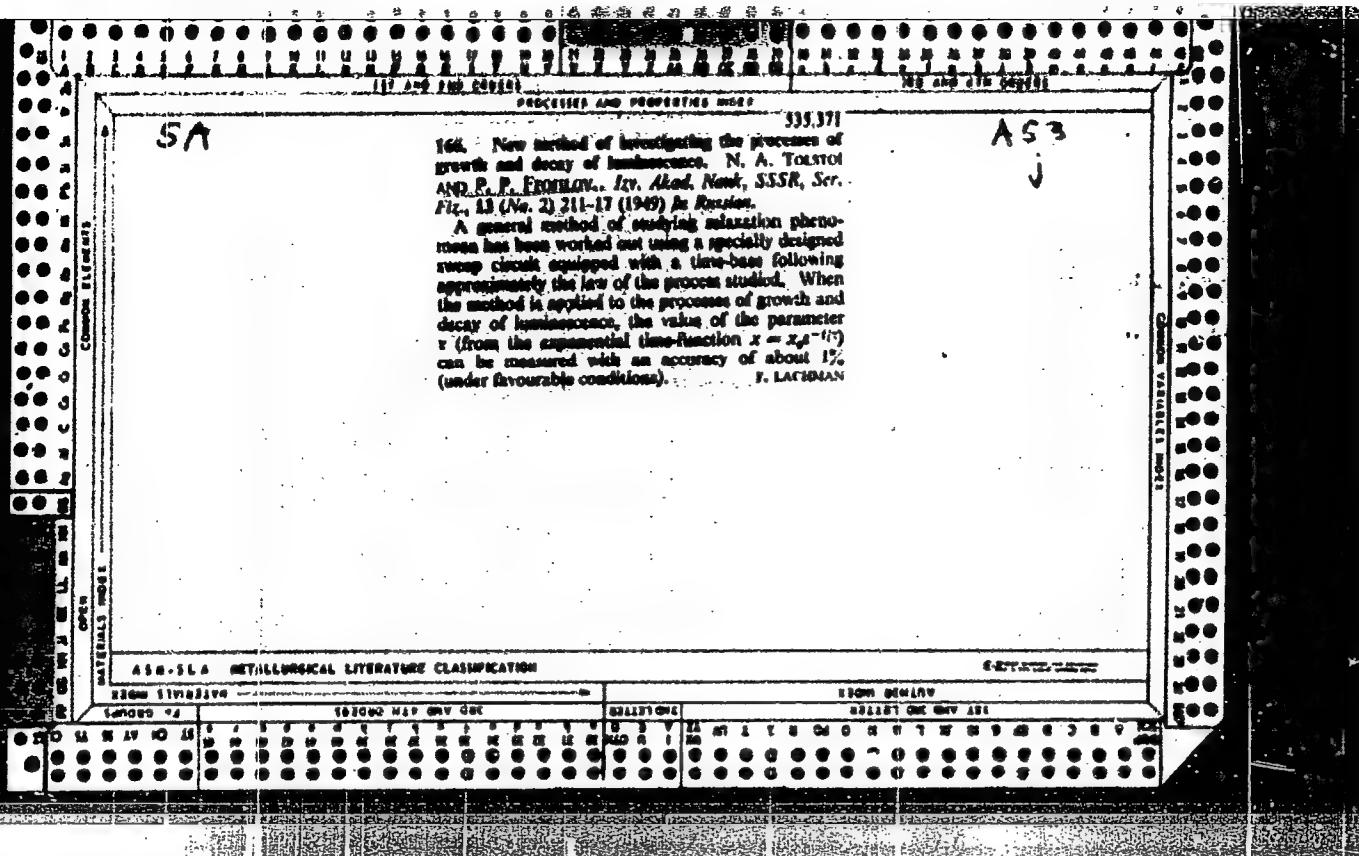
Jan/Feb 49

36/49193

DSRR/Physics (Contd)

Jan/Feb 49

36/49193



FEOFILOV, P. P.

USSR/Physics  
Relaxation Phenomenon  
Oscillographs

May 49

"New Method of Studying Processes," N. A. Tolstoy, P. P. Feofilov, State Optical Inst, 10 pp

"Zhur Eksper i Teoret Fiz" Vol XIX, No 5

Describes new oscillographic method of studying relaxation of physical processes, based on the use of nonlinear graphing. Method is applicable to processes occurring in the time interval  $10^{-6}$  -  $10^1$  sec. In the case of relaxation taking place according to the exponential law ( $\exp -t/\tau$ ), value of  $\tau$  may be determined after several seconds. Generalization of method, called "the method of partial time," is applicable to processes in which relaxation occurs according to any law. Submitted 6 Nov 48.

PA 46/49T99

FEOFILOV, P. P.

USSR/Physics - Dielectric Constants  
Polarization, Relaxation

Dec 49

"Application of the New Method for Studying Relaxation Processes to a Study of Relaxation Polarization in Dielectrics," G. I. Skanavi, N. A. Tolstoy, P. P. Feofilov, K. I. Lebedev, Phys Inst imeni Lebedev, Acad Sci USSR, 9 pp

"Zhur Eksper i Teoret Fiz" Vol XIX, No 12

To study relaxation polarization in dielectrics of titanium dioxide with small additions of oxides of metals belonging to the second group of the periodic table (this group gives very high values of  $\epsilon$  in the region of low frequencies), one employs the oscillographic method of studying, by electrical square-wave impulses through ohmic resistances, the charge and discharge of the condensers containing the dielectric under study. Here a simple exponential development of the process in time is employed, as well as more complicated ones. Shows charge and discharge processes of the condenser with the dielectric under study have a complex character differing from the exponential. Equivalent circuit schemes are found for the dielectrics under study. Parameters of these schemes are determined experimentally. Calculation of these equivalent schemes permits one to obtain the function of current drop with time in each studied dielectric with calculated constants and thus to evaluate values of initial currents. Submitted 23 Jun 49

PA 152T87

FEOFILOV, P. P.

Jan 49

USSR/Physics  
Phosphors  
Luminescence

"A Study of the Initial Stages of Luminescence and Extinguishing in Zinc-Sulfide Phosphors With the Aid of an Oscillographic Phosphoroscope," V. A. Arkhangel'skaya, A. M. Bonch-Bruyevich, N. A. Tolstoy, P. P. Feofilov, 4 pp

"Dok Ak Nauk SSSR" Vol LXIV, No 2

Partial results obtained during study of crystallic phosphors by the "partial time" method. Method allows studies to be conducted in the time interval 10<sup>-5</sup>-10<sup>-1</sup> seconds, suitable for investigating the little-studied initial stages of extinguishing, and the completely unstudied stages of crystallic phosphors bursting into luminescence. Submitted 5 Nov 48.

PA 25/49T99

FEOFILOV, P. P.

USSR/Physics  
Optics  
Colloids

Jun 49

"Certain Electro-Optical Phenomena in Colloids," N. A. Tolstoy, P. P. Feofilov,  
State Opt Inst, 4 pp

"Dok Ak Nauk SSSR" Vol LXVI, No 4

Studied electrical double refraction and electrical dichromism of colloids using  
(1) optical arrangement with a Kerr cell, (2) voltage sources, changing according  
to a special law, (3) obdurator, and (4) photoelement, amplifier, and cathode  
oscilloscope. Tested water solutions of bentonite, benzopurpurin, graphite,  
anisaldazin, n-azoxyanisole, and other liquid crystals. Submitted by S. I. Vavilov,  
25 Mar 49.

PA 46/49T89

FEOFILOV, P. P.

PA 52/49T105

USSR/Physics

Photoconductivity  
Bismuth Compounds

May 49

"Initial Stages of Relaxation in the Photoconductivity of  $\text{Bi}_2\text{S}_3$ ," D.B. Gurevich,  
N. A. Tolstoy, P. P. Feofilov, 4 pp

"Dok Ak Nauk SSSR" Vol LXVI, No 3. Submitted by Acad S. I. Vavilov, 25 Mar 49.

CA

J

Some peculiarities of the flare-up of ZnS:Mn phosphor. N. A. Toktof and P. I. Levshin. *Dobrolyub.* No. 1, No. 1, p. 24b (1970). In excitation by a light-vapor lamp, the blue (Zn) band of the ZnS:Mn phosphor shows, in oscillographic phosphoroscopy, normal growth of intensity, but the yellow (Mn) band first flares up to a peak, from which it rapidly falls to the stationary intensity. In samples heated 16 min. at 900° under a NaCl flux, with  $1 \times 10^{-3} - 1 \times 10^{-2}$  g. Mn/g., the peak was most pronounced at  $1 \times 10^{-2}$  g./g., and was still observable with  $5 \times 10^{-3}$  and  $3 \times 10^{-4}$  g./g. The effect is thus most marked at activator concns. at which the competition between the blue and the yellow emission is most pronounced. The height of the peak (relative to the stationary intensity) increases with the intensity of excitation, and with the length  $t_0$  of the (equal) periods of illumination and darkness (between 0.01 and 0.4 sec.). On cooling to liquid-air temp., the effect disappears in samples in which it was present at room temp., whereas samples with too high or too low Mn contents show no new peculiarities. On heating to above room temp., the relative height of the peak first increases, then falls, along with a general increase of the stationary brightness, with a distinct min. appearing between the peak and the level branch. Further increase of the temp. brings the curve back to normal, without peak or min. The peak phenomenon is thus confined to a range close to room temp. By exponential spreading, the max. of the peak is found to be attained within a few msec. from the beginning

of the excitation; this time is practically independent of  $t_0$ , and decreases with increasing intensity of excitation. The peak can be made visually observable with the aid of a rotating disk coated with the phosphor on its periphery; the brightness of the excited luminescent spot, if viewed through a red filter, first increases, then decreases with increasing speed of rotation, whereas the contrary appears through a blue filter. The decay of the yellow emission also presents peculiarities. It is very fast in the beginning of the dark period, then is slowed down almost to a standstill, then proceeds at the normal rate. This effect is most pronounced with  $5 \times 10^{-3}$  g. Mn/g., and is absent altogether above  $5 \times 10^{-2}$  or below  $1 \times 10^{-4}$  g./g. Again the blue emission decays normally throughout. The phenomenon of the flare-up can be interpreted in agreement with the representations of Levshin (C.A. 62, 3286c), by assuming that at the end of a dark period of sufficient length  $t_0$ , the levels of Mn have become empty, as a consequence of which electron transitions to these levels are uninhibited in the 1st stages of excitation, but become stationary as soon as the levels have become "plugged" with electrons. This mechanism accounts satisfactorily for all the effects observed, except for the disappearance of the flare-up at too low Mn concns., and for the min. observed at moderately high temps.  
N. Thon

FEOFILOV, P. P.

Relaxation of the photoconductivity in semiconductors. D. B. Gurovich, N. A. Tolstoi, and ~~P.~~ P. Feofilov. Zhur. Ekspil. Teoret. Fiz. 20, 769-82 (1950).-- The kinetics of the photocond.  $\Delta\sigma$  were investigated by oscilloscopy, in illumination with rectangular light impulses (mostly of a period ~0.04 sec.), with rectangular voltage impulses of a frequency very considerably greater than that of the light impulses, and with exponential sweep of the oscilloscope screen. The exptl. relaxation curves are represented in the coordinates  $\theta = \Delta\sigma / (d\Delta\sigma/dt) = dt/d(\ln\Delta\sigma)$  vs. time  $t$ ; the magnitude  $\theta$  signifies an "instantaneous relaxation time," i.e. the relaxation time  $r$  of the exponential  $e^{-t/r}$  which approximates the exptl. curve at any point corresponding to the moment  $t$ . In other words,  $\theta$  expresses at any given moment the "sp. slowness" of the relaxation, i.e. the reciprocal of the rate of fall of  $\sigma$  relative to the distance from equil. For simple exponential processes,  $\theta$  coincides with the relaxation time  $r$ , i.e. exponential processes are characterized by a const.  $\theta$ . The rate law of the relaxation can be deduced from the shape of the  $\theta(t)$  plots. (1) For  $\text{Bi}_2\text{S}_3$  (thin layer on glass),  $\theta$  is a linear function of  $t$  at any temp. between 189 and 326°K., i.e.,  $\theta = A + Bt$ , or, with  $A = 1/\alpha$ ,  $B = 1/\alpha$ , and after integration,  $\Delta\sigma = \Delta\sigma_0 / (1 + at)^\alpha$ , where  $\Delta\sigma_0$  = initial photocond. This hyperbolic law of the decrease of  $\Delta\sigma$  is analogous to the Bécquerel law in phosphorescence. Between 189 and 326°K.,  $\alpha$  varies from 0.039 to 0.23, following  $\alpha = \alpha_0 e^{kT/u}$ , with  $u = 6.2 \times 10^{-3}$  e.v., and  $\alpha_0$  (dimensionless) =  $1.23 \times 10^{-3}$ . The parameter  $a$  is roughly independent of the temp. and is =  $1200 \text{ sec.}^{-1}$  at max. illumination  $E$ . The plot of the stationary  $\ln\Delta\sigma_0$  vs.  $\ln E$  is linear. At const. temp.,  $a$  is approx. proportional to  $E^{1/\beta}$ , with  $\beta = 3-4$ , and the variation of  $\Delta\sigma$  with  $E$  obeys approx. the same law. This gives the simple relation  $\alpha = \alpha E^{-\beta} + P\Delta\sigma$ . The growth of  $\Delta\sigma$  during illumination follows a complex nonexponential law; its

temps. the growth of  $\Delta\sigma$  is exponential. The exponent  $\alpha$  in the decay law increases with temp., particularly rapidly between  $\sim 150$  and  $\sim 200^\circ$ ;  $a - a_0 = k_3 E^{1/2}$ , with  $k_3$  falling with rising temp. In the growth law  $\Delta\sigma = \Delta\sigma_0 (1 - e^{-r/r})$ ,  $1/r = k_4 E^{1/2}$ , with  $k_4$  falling with rising temp. With further rising temp., the growth curve deviates increasingly from the exponential. The values of  $a$  and  $1/r$  are of the same order of magnitude. Above  $200^\circ\text{C}$ ., both the growth and the decay are exponential, with  $r$  independent of  $E$  but varying with the temp. according to  $r \sim e^{-u/kT}$ , with  $u = 0.45$  e.v. (7) Photoconductors can be divided into 2 categories; (I) "exponential" photoconductors, characterized by a stationary  $\Delta\sigma_0 \sim E$ , a dark cond. roughly 10-100 times the photocond., exponential growth and exponential decay of  $\Delta\sigma$  with the same  $r$  in both instances, and independent of  $E$ ; the temp. variation of  $1/r$  is analogous to the temp. variation of the dark cond., and of the form  $e^{-u/kT}$  in both instances; examples of this category are Cu<sub>2</sub>O, and CdS at higher temps. (II) "Hyperbolic" photoconductors, characterized by  $\Delta\sigma_0 \sim E^{1/2}$ , a relatively low dark cond., a decay following  $\Delta\sigma = \Delta\sigma_0 / (1 + al)^{\alpha}$ , with  $\alpha$  independent of  $E$ , and  $a \sim E^{1/2}$ ; the growth can be exponential, in which case  $1/r \sim E^{1/2}$ . Examples are Bi<sub>2</sub>S<sub>3</sub>, Tl<sub>2</sub>S, Se, InSe, and CdS at low temps. Possible deviations of certain properties (except the hyperbolic decay) from this simple scheme are viewed as complications only.

N. Thon

FEOFILOV, P. P.

USSR/Physics - Phosphors Photoconductivity

Nov 50

"Comparison of Photoconductivity Relaxation," D. B. Gurevich, N. A. Tolstoy,  
P. P. FEOFILOV

"Zhur Eksper i Teoret Fiz" Vol XI, No 11, pp 1039-1046

Compares experimental laws governing kinetics of photoconductivity with experimental  
laws governing kinetics of luminescence. Establishes parallelism of these laws.

Calculates luminescence relaxation of cadmium sulfide from its photoconductivity  
relaxation. Submitted 4 Apr 50.

PA 169 T107

C A

New method of investigation of relaxation processes and  
its application to the study of some physical processes.  
N. A. Tolstof and P. P. Frolov. *Ospeshni Fiz. Nauk* 41,  
44-107(1950).—Review, particularly of the authors' own  
work on rectilinear oscillography of the decay of photo-  
fluorescence, photocurrents, etc. 33 references. N. Thon

FEOFILOV, P. P.

1 Mar 50

USSR/Physics - Luminescence  
Conductivity, Photo-

"Luminescence and Photoconductivity of Cadmium Sulfide," D. V. Gurevich, N. A. Tolstoy, P. P. FEOFILOV

"Dok Ak Nauk SSSR" Vol LXXI, No 1, pp 29-32

Investigated kinetics of luminescence and photoconductivity, carried out by method of "taumeter" (tau— life span or duration) on CdS monocrystals. Mathematically discusses phosphorescence relaxation and so-called "nonlinear" photoconductivity. Taumeter was described in ZhETF 19, 421, 1949, and "Iz Ak Nauk SSSR, Ser Fiz," 13, 211, 1949, by Tolstoy et al. Submitted 3 Jan 50 by Acad S. I. Vavilov.

PA 165T75

FEOFILOV, P. P.

A. N. Terenin, acad., and P. P. Feofilov. The greatest Soviet scientist-optician.  
(refers to S. I. Vavilov) P. III

SO: Vestnik, Messenger of the Acad. of Sci., USSR. 21, 3, (1951).

we.

## Materials + Subsidary Techniques

3100

333.37 The Third All-Union Conference on Luminescence and the Applications of Luminescent Materials. - P. Fofanov (*Uspeshki fiz. Nauk*, Nov. 1951, Vol. 45, No. 3, pp. 445-457). Report on a conference held in Moscow, June 15-21, 1951. Summaries of 43 papers are given.

FEOFILOV, P. P.

USSR/Physics - Semiconductors

Jan/Feb 52

"Kinetics of Photoconductivity and Kinetics of Phosphorescence," N. A. Tolstoy, P. P. Feofilov

"Iz Ak Nauk SSSR, Ser Fiz" Vol XVI, No 1, pp 59-69

Separates relaxation of photocond into 2 basic types: hyperbolic and exponential. Considers non-linear photoresistance with relatively low dark-current cond, characterized by bimol recombination mechanism, as belonging to the hyperbolic type; while linear photoresistance with high dark-current cond belongs to the exponential type.

218T87

1. FEOFILOV, P. P.
2. SSSR (600)
4. Vavilov, Sergei Ivanovich, 1891-1951
7. New developments in the theory of light ("Microstructure of light.")  
S. I. Vavilov. Reviewed by P. P. FEOFILOV.  
Usp. fiz. nauk 46 No. 1, 1952
9. Monthly List of Russian Accessions, Library of Congress, February 1953. Unclassified.

FEOFILOV, P. P.

PA 236T76

USSR/Physics - Optics, Book Review

Sep 52

"New Paths in the Development of Theory of Light  
(Review of S. I. Vavilov's book, 'Microstructure of  
Light')," P. P. Feofilov

"Uspekhi Fiz Nauk" Vol 48, No 1, pp 3-24

Praises Vavilov's work, describing visual observa-  
tions of quantum fluctuations of light, principles  
of superposition and "nonlinearity" in optics, micro-  
optical analysis of interference, Vavilov-Cherenkov  
effect, microoptics of absorbing media, inductive  
resonance, and migration of energy. Expects book to  
be a perfect manual for future generations.

236T76

FEOFILOV, P. P.

235T93

USSR/Physics - Luminescence Extinction 21 Jul 52

"Problem of Extinction of Luminescence of Rubin  
(Al<sub>2</sub>O<sub>3</sub>.Cr)," N. A. Tolstoy, P. P. Feofilov

"Dok Ak Nauk SSSR" Vol 85, No 3, pp 551-554

Presents certain data on concen, temp, and spectral depen-  
dences of curves of extinction (and lighting)  
of luminescence of synthetic ruby, from which it  
follows that the mechanism governing luminescence  
in rubies is rather complex. Submitted by Acad  
A. N. Terenin 26 May 52.

235T93

PA 240T97

FEOFILOV, P. P.

USSR/Physics - Luminiscence

21 Dec 52

"Absorption and Luminiscence Spectra of Triphenylmethane Dyes," P. P. Feofilov and I. G. Fayerman

"IAN SSSR" Vol 87, No 6, pp 931-934

Compare absorption and emission spectra of triphenylmethane dyes in order to verify that luminescence spectra should be narrower than absorption band. Results are tabulated. Besides fluorescence, the dyes emit for a few seconds a greenish afterglow in a wave-length shorter than the exciting light. Presented by A. N. Terenin. Received 21 Oct 52.

240T97

PA 254T61

FEOFILOV, P. P.

USSR/Electronics - Radio Location, History - Jan 53

"Unknown Work by S. I. Vavilov on Locating Hidden  
Radios,"<sup>1</sup> P. P. Feofilov and I. A. Shlyakhter

Usp Fiz Nauk, Vol 49, No 1, pp 147-154

Describes an unpublished work by S. I. Vavilov con-  
cerning the location of enemy radio transmitters  
during World War I.

254T61

PEPPERMINT FLOW

Kinetics of luminescence of silver halide salts V. A. Arkhangelskaya and N. G. Tsvetkov

APPROVED FOR RELEASE: 08/23/2000

**CIA-RDP86-00513R000412910009-5"**

FEOFILOV, P.P.

Polarization of the luminescence of F-centers in crystals of alkali halides. P. P. FEOFILOV. *Doklady Akad. Nauk S.S.R.*, 62, 743 (1957) [Engl. translation issued as U.S. Atomic Energy Comm., NSF-tr-208, 4 pp. (1954)]; cf. *C.A.* 48, 74395. —The study was made with large LiF and NaF single crystals. The crystals were colored by x-irradiation. The absorption spectrum of NaF presented peaks at about 340 and 510 m $\mu$ . The absorption spectrum of LiF was almost identical with that reported by Klick (*C.A.* 45, 10059c). The red-orange luminescence of NaF was excited with a spectrum practically unchanged over the entire region of spectral absorption of the crystal and was quite intense with excitation in both absorption bands. Excitation of x-rayed LiF by 430-m $\mu$  light yielded a bright orange luminescence, while excitation by 365-m $\mu$  light resulted in bright green luminescence. Duration of luminescence was much less than 10 microsec. The luminescence of x-rayed LiF and NaF single crystals excited by linearly polarized light was partially polarized. For NaF, the polarization changed sign with transition of excitation from the vicinity of the long-wave absorption band to the short-wave band. Because the emission spectrum was almost unchanged, it was concluded that in NaF both bands must be ascribed to centers of the same type. It was assumed that the long-wave oscillators were distributed along the 6 C<sub>3</sub> axes which pass through the centers of the opposite edges of the elementary cube. The circular oscillators describing the short-wave absorption were arranged in the (110) planes of the rhombohedron. Calcs. were made which resulted in excellent agreement for the azimuthal dependence of the degree of polarization. The abs. values calcd. differ somewhat from exptl. values because the anisotropy of the oscillators was not complete. Spontaneous polarization under excitation by natural light was observed in plates cut parallel to the (110) plane. Calcs. were in full agreement with the exptl. data. H. L. Jr.

JL  
10/18/54

FEOFILOV, P. P.

USSR/Physics - F-Centers Crystals

21 Sep 53

"Photochemical Conversion of F-Centers in KCl Crystals at High Temperatures," A.A. Matalov, Kiev State Univ in Shevchenko.

DAN SSSR, Vol 92, no 3, pp 549-552

Studies effect of light at high temps on absorption of KCl crystals containing  $\text{F}^+$ -centers. Used method of S.A. Artsybashev (Trudy Fiz Inst Lebedev, Vol 2, No 3 (1938)). Plots the variation of X-band, obtained at const irradiation of crystal and decaying after discontinuance of irradiation. Considers X-centers as a primary formation of colloidal coagulation of several or, most probable, 2 F-centers. Presented by Academ A.N. Terenin 21 Jul 53.

268T95

FEOMLOV, P. P.

USSR/Physics - Luminiscence,  
F-Centers

21 Sep 53

"Polarized Luminiscence of F-Centers in CaF<sub>2</sub>," P.P.  
Feofilov

DAN SSSR, Vol 92, No 3, pp 545-548

Revealed intensive red luminiscence of CaF<sub>2</sub> crystals, dyed by additive or subtractive method. This luminiscent excitation spectrum coincides with the absorption spectrum of F-centers and therefore may be ascribed to F-centers. The latter may be interpreted as electrons localized in holes of halide ions. Presented by Acad A.N. Terenin 20 Jul 53.

268T94

USSR/Minerals - Spectral analysis

Card 1/1 Pub. 43 - 91/97

Authors : Fefilov, P. P., and Kuznetsova, L. A.

Title : Spectral luminescence method of determining the Cr content in synthetic rubies

Periodical : Izv. AN SSSR. Ser. fiz. 18/2, page 297, Mar-Apr 1954

Abstract : A method was developed for quantitative spectral determination of chromium in natural and synthetic rubies. A study of spectral, kinetic and polarization characteristics of the luminescence of rubies with various Cr contents showed that a change in Cr concentration affect mostly the luminescence spectra. The Cr ions which are isomorphically included in the crystalline lattice of corundum ( $Al_2O_3$ ), determine the red color intensity and the luminescence of natural and synthetic ruby crystals.

Institution : .....

Submitted : .....

Feofilov, P. P.

USSR/ Physics - Spectral analysis

Card 1/1 Pub. 43 - 27/62

Authors : Feofilov, P. P.

Title : Spatial distribution of radiation and the nature of coloration centers in  
ion crystals

Periodical : Inv. AN SSSR. Ser. fiz. 18/6, 688-689, Nov-Dec 1954

Abstract : It was established that the luminescence of coloration centers forming  
during photochemical or additive coloring of CaF<sub>2</sub>, NaF and LiF monocrystals  
and excited by a linear-polarized light is partially polarized. The observed  
absolute values of the polarization indicate the high anisotropy of the  
radiation centers of the coloring matter. The relation between the degree  
of polarization and the relative orientation of the crystal and the exciting  
electrical vector, is discussed. Graph.

Institution: .....

Submitted : .....

FD 425

USSR/Physics - Color centers

Card 1/1 Pub. 147-11/16

Author : Feofilov, P. P.

Title : Anisotropy of the radiation of color centers in crystals of cubic syngony

Periodical : Zhur. eksp. i teor. fiz. 26, 609-623, May 1954

Abstract : On the basis of a classical oscillator model the author calculates the azimuthal dependence of the degree of polarization of luminescence of the color centers in cubic crystals. Conducts the computation for the cases where the elementary oscillators are oriented along the basis of symmetry of the fourth, third, and second orders and for the excitation of luminescence in various regions of the absorption spectrum. Comparison of the computed and experimental data permits one to establish the character of the orientation of the color centers in various cases investigated and to express assumptions concerning the nature of the centers.

Institution :

Submitted : September 4, 1953

"APPROVED FOR RELEASE: 08/23/2000

CIA-RDP86-00513R000412910009-5

APPROVED FOR RELEASE: 08/23/2000

CIA-RDP86-00513R000412910009-5"

USSR/Physics - Crystallography

Card 1/1 Pub. 22 - 17/56

Authors : Feofilov, P.P.

Title : About orientation of the Eu<sup>+++</sup> ions in the lattice of crystal CaF<sub>2</sub>

Periodical : Dok. AN SSSR 99/5, 731-733, Dec. 11, 1954

Abstract : Results of the fluorescence-polarizing method, applied to CaF<sub>2</sub> crystals, for determining the orientation of Eu<sup>+++</sup> ions on the crystal lattices are described. Four references: 3-USSR (1934-1954) Graph; Photodiagrams.

Institution:

Presented by: Academician A.N. Terenin, August 6, 1954

FEOFILOV P.P.

K-5

Category : USSR/Optics - Physical Optics

Abs Jour : Ref Zhur - Fizika, No 2, 1957, No 4963

Author : Feofilov, P.P.  
Title : Experimental Determination of the Nature of the Elementary Radiators  
of the Eu<sup>3+</sup> Ion in CaF<sub>2</sub>.

Orig Pub : Dokl. AN SSSR, 1954, 99, No 5, 975-958

Abstract : The method of polarization luminescence diagrams, proposed by S.I. Vavilov (Zh. eksperim i teor. Fiziki, 1940, 10, 1363), for the determination of the nature (multi-polarity) of elementary radiators, is applicable to the investigation of the luminescence of Eu<sup>3+</sup> in single crystals of CaF<sub>2</sub>-Eu. Employing data obtained in an earlier work (Referat Zh. Fizika; 1956, 5304) with respect to the character of the orientation of the elementary radiators of the Eu<sup>3+</sup> ion (orientations along the third-order symmetry axes) the author computed the dependence of the intensity (J) and polarization (P) of the luminescence -- excitation through the face parallel to (100), observation through the face parallel to (110) -- on the angle of rotation ( $\gamma$ ) of the electric vector exciting

Card : 1/2

Category : USSR/Optics - Physical Optics

K-5

Abs Jour : Ref Zhur - Fizika, No 2, 1957, No 4963

the linearly-polarized light. A calculation carried out for four types of elementary dipole radiators (electric and magnetic linear -- $\Pi_e$  and  $\Pi_m$  and circular -- $\sigma_e$  and  $\sigma_m$ ) -- shows that the investigation of the functions  $J(\gamma)$  and  $P(\gamma)$  leads to an unambiguous conclusion concerning the multipolarity of the radiators (under the assumption that the absorption of light is carried out by linear electric oscillators). In many cases there is no need for a full investigation of the functions  $J(\gamma)$  and  $P(\gamma)$ , and the determination of the nature of the radiators can be reduced to a qualitative observation of the sign of  $P$  and of the character of the function  $J(\gamma)$ . The use of this method has made it possible to ascertain, that among the most intense lines in the luminescence spectrum of the Eu<sup>3+</sup> ion in CaF there are lines corresponding to all four possible types of dipole radiators ( $\Pi_e$ ,  $\Pi_m$ ,  $\sigma_e$ , and  $\sigma_m$ ).

Card : 2/2

FEOFILOV, P. P., Doctor of Physico-Mathematical sciences

"The Polarized Luminescence of Cubic Crystals" paper presented at the Conference  
on Molecular Luminescence and Luminescent Analysis, MINSK from 20 to 25 June 1955.

YEOFILOV, Petr Petrovich.

Academic degree of Doctor of Physico-Mathematical Sciences, based on his defense, 29 June 1955, in the Council of State Order of Lenin Optical Inst imeni Vavilov, of his dissertation entitled: "Polarized luminescence of atoms, molecules, and crystals."

Academic degree and/or title: Doctors of Sciences

SO: Decision of VAK, List no. 4, 25 February 1956, Byulleten' MVO SSSR, No. 1, January 1957, Moscow, pp. 14-24, Uncl.  
JPRS/NY-440

USSR/Physics - Absorption band

FD-2982

Card 1/1 Pub. 146 - 23/28

Author : Grechushnikov, B. N.; Feofilov, P. P.

Title : Oscillatory structure in the absorption spectrum of rubidium at minus 190° C

Periodical : Zhur. eksp. i teor. fiz., 29, September 1955, 384

Abstract : S. I. Pekar (ibid., 22, 641, 1952) and M. A. Krivoglaz (co-author S. I. Pekar, Trudy Instituta fiziki AN Ukr. SSR, 4, 37, 1954) showed theoretically that the form of the absorption band for admixtures in dielectrics can be represented under definite assumptions in the form of the product of two frequency functions, the first factor representing the smooth bell-shaped curve and describing the general contour of the absorption spectrum and the second factor representing a rapidly oscillating function and describing the so called structure of the absorption band. B. N. Grechushnikov (DAN SSSR, 99, 707, 1955) investigated the absorption spectrum of rubidium at the temperature of liquid nitrogen (the earlier study of the influence of temperature was by K. Gibson, Phys. Rev., 8, 38, 1916). The present writer obtains greater detail. Five references: e.g. Krishnan, Proc. Ind. Soc., 26, A, 6, 450, 1947.

Institution : Institute of Crystallography, Academy of Sciences USSR

Submitted : May 19, 1955

FEOFILov, P.P.

USSR/Physics - Conferences

Card 1/1 Pub. 118 - 5/8

Authors : Neporen, B. S. and Feofilov, P. P.

Title : The 9th conference on spectroscopy

Periodical : Usp. fiz. nauk 55/3, 443-452, Mar 1955.

Abstract : A description of the work conducted at the 9th conference on spectroscopy is presented. The conference took place at Tarty (Estonia) during July 5 to 11, 1954. The conference was divided into 3 separate sections: 1. molecular spectroscopy; 2. general and atomic spectroscopy; and 3. spectral analysis. Reports on molecular spectroscopy, read by many scientists, are outlined.

Institution: .....

Submitted : .....

FEOFILOV, P.P.

K-5

Category : USSR/Optics - Physical Optics

Abs Jour : Ref Zhur - Fizika, No 2, 1957, No 4959

Author : FEOFILOV, P.P.

Title : Concerning the Theory of Polarization of Resonant Radiation and Fluorescence of Atoms and Diatomic Molecules.

Orig Pub : Dokl. AN SSSR, 1955, 104, No 6, 846-849

Abstract : The degree of polarization  $P(J)$  and the degree of circularity  $C(J)$  of fluorescence is calculated for plane-polarized or circularly-polarized light respectively. The population of the upper level is determined by the probability of the dipole transition  $A_{J_1 M}^{J_2 M}$  in the former case and  $A_{J_1 M \pm 1}^{J_2 M}$  in the latter. The intensity of the  $\pi$  and  $\sigma$  components is determined by the same population and by the probability of the reverse transition  $M \rightarrow M(\pi)$  and  $M \rightarrow M \pm 1(\sigma)$ . This yields  $P(J) = \frac{I_\pi - I_\sigma}{I_\pi + I_\sigma}$  and analogously  $C(J) = \frac{I_\pi - I_\sigma}{I_\pi + I_\sigma}$ , where  $I_k$  is the intensity of the components with right and left-hand circular polarization. The results are given for the transitions  $J_1 \rightarrow J_2 \rightarrow J_3$  (for all nine combinations, satisfying the selection rules) as functions of  $J_1$ . The equations obtained

Card : 1/2

VAVILOV, S.I.; LEBEDEV, A.A., akademik; TOPCHIYEV, A.V., akademik; TIRENIN, A.N., akademik; LANDSHERG, G.S., akademik; VUL, B.M.; KRAVETS, T.P. [deceased]; LEVSHIN, V.L.; FEOFILOV, P.P.; GALANIN, M.D.; KUZNETSOV, I.V.; VAVILOV, V.S.; GUROV, K.P., redaktor izdatel'stva; KISELEVVA, ALAL, tekhnicheskiy redaktor

[Collected works] Sobranie sochinenii. Moskva, Izd-vo Akademii nauk SSSR. Vol.4.[Experimental foundation of the theory of relativity. On "warm" and "cold" light. The eye and the sun. Popular scientific articles and reviews] Eksperimental'nye osnovaniia teorii otnositel'nosti, O "teplichem" i "kholodnom" svete, Glaz i solntse, Nauchno-populiarnye i obzornye stat'i. 1956. 469 p. (MIRA 9:8)

1. Chlen-korrespondent AN SSSR (for Vul, Kravets)  
(Physics)

"APPROVED FOR RELEASE: 08/23/2000

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"APPROVED FOR RELEASE: 08/23/2000

CIA-RDP86-00513R000412910009-5

EE/SELL OUT P.R.

Vibration structure in the absorption spectrum of ruby.  
B. N. Grechushnikov and P. P. Feofanov. Soviet Phys.  
JETP, 2, 330(1956)(Engl. translation). See C.A. 50(1956)

B.M.R. 3

APPROVED FOR RELEASE: 08/23/2000

CIA-RDP86-00513R000412910009-5"

FEOFILOV, P.P.

FEOFILOV, P.P.

Polarized luminescence of cubic crystals. Izv.AN SSSR Ser.fiz.no.5:  
552 '56. (Luminescence) (MIRA 9:9)

FEQFILOV, P.

Sergei Ivanovich Vavilov, March 24, 1891--Jan 25, 1951. Opt.1  
spektr. i no.2:107-112 Je '56. (MLRA 9:11)  
(Vavilov, Sergei Ivanovich, 1891-1951)

FEOFILOV, P. P.

B-5

USSR/Crystals.

Abs Jour : Referat Zhur - Khimiya, No 6, 1957, 18340

Author : P.P. Feofilov.  
Title : Nature of Elementary Oscillators and Polarization of  
Photoluminescence in Cubic System Crystals.

Orig Pub : Optika i spektroskopiya, 1956, 1, No 2, 131-142

Abstract : The possibility of an experimental determination of the multipole order of elementary oscillators of luminescence centers orientated along different axes of symmetry of cubic system crystals is discussed in general. The theoretical computation of the dependence of the luminescence intensity and polarization on the reciprocal position of the observation direction and the electrical vector of the exciting light is carried out for three possible cases of the center orientation (along the axes of symmetry of the 2nd, 3rd and 4th order) and for all the possible combinations of dipole oscillators

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USSR/Crystals.

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Abs Jour : Referat Zhur - Khimiya, No 6, 1957, 18340

(electrical and magnetic, linear and circular). For the same oscillator combinations, the corresponding dependences are computed for randomly distributed centers (isotropic solutions). The computed dependences show that in the majority of cases, the multipole order of absorbing and radiating oscillators can be determined uniquely. The method is applicable in presence of polarized luminescence in investigated centers. Experimental data confirming the usefulness of the method are quoted.

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CIA-RDP86-00513R000412910009-5

*F. PROFILOV, P.P.*  
ARKHANGEL'SKAYA, V.; TOLSTOY, N. ~~PROFILOV, P.~~

Fifth Conference on Luminescence (crystal phosphors). Opt.  
i spektr. 1 no.6:813-820 O '56.  
(MLRA 9:12)

(Tartu--Luminescence--Congresses)

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CIA-RDP86-00513R000412910009-5"

*PERFILOV, P.P.*

Category: USSR / Physical Chemistry - Crystals

B-5

Abs Jour: Referat Zhur-Khimiya, No 9, 1957, 29743

Author : Perfilov P. P.

Inst : not given

Title : Anisotropy of Luminescent Coloration Centers in CsI-Tl Crystals

Orig Pub: Optika i spektroskopiya, 1956, 1, No 7, 952-954

Abstract: Investigation of anisotropy of radiation of coloration centers which arises on irradiations of crystals of CsI-Tl with ultraviolet, x-ray or gamma radiation. As a result of study of azimuth dependence of luminescence polarization it was found that luminescence polarization depends strongly upon the relative orientation of exciting electric vector and the crystallographic axes, and that the anisotropic luminescent coloration centers are oriented along 4-th order symmetry axes of CsI crystals. Study of polarization spectrum and of dependence of the degree of polarization upon wave length of radiation, shows that degree of polarization is greatly dependent on radiation wave length. This is attributed to the fact that the radiation band

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Category: USSR / Physical Chemistry - Crystals

Abs Jour: Referat Zhur-Khimiya, No 9, 1957, 29743

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constitutes, apparently, a superposition of at least two bands, corresponding to different types of coloration centers. A center model is proposed: the center consists of  $Tl^+$  ion, isomorphously replacing a  $Cs^+$  ion and associated with another defect ( $Tl^+$  ion or a hole), which is also localized within the cation point.

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Feofilov, P. P.

USSR/Optics - Physical Optics

K-5

Abs Jour : Referat Zhur - Fizika, No 5, 1957, 12923

Author : Tishenko, G.A., Feofilov, P.P.  
Inet : -

Title : Luminescence of Color Centers in Crystals of Fluorite

Orig Pub : Izv. AN SSSR, ser. fiz., 1956, 20, No 4, 482-487

Abstract : An investigation was made of the contours of the absorption band and of the luminescence of the color centers in artificial crystals of fluorite. The bell-shaped form of the bands is satisfactorily described by the theory of impurity absorption (Pekar). The Stokes shift of the bands, calculated with formulas of this theory using data on the half widths of the bands, is also in agreement with the experimental data. The method of polarization of the luminescence diagrams was used to establish the electric dipole character of the elementary oscillators, describing the absorption and radiation. It is proposed that there

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USSR/Optics - Physical Optics.

Abs Jour : Ref Zhur - Fizika, No 5, 1957, 12923

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exists an infrared luminescence of complex (double) color  
centers in crystals of alkali-halide salts.

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*Feofilov PD*

USSR/ Physics - Scientific conferences

Card 1/1 Pub. 118 - 6/7

Authors : Neporenko, B. S., and Feofilov, P. P.

Title : The Fourth Luminescence Conference (Molecular Luminescence and Luminescence Analysis)

Periodical : Usp. Fiz. nauk, 58/1, 151-164, Jan 1956

Abstract : The fourth conference on luminescence is recounted. The conference, which took place at Minsk, BSSR, was called by the Acad. of Scs. of the BSSR, Physical Institute imeni P. N. Lebedev, the Acad. of Scs. of the USSR and the Optical Institute imeni S. I. Vavilov. More than two hundred (200) scientists of various fields participated in the conference. Possibilities for studying intermolecular processes through the observation and analysis of luminescence were discussed.

Institution : ....

Submitted : ....

DEPTLOV, P.P.

Nature of the color of green fluorite  
Apatitovskaya Mine, observations 65  
The color range from light blue to  
light green and yellowish-green.  
It is often called as "blue fluorite".  
At a temperature of 100° the color  
of spectrum will change from  
yellow to blue. The color  
of the mineral is determined by  
the presence of iron.

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FEOFILOV, P. P.

USSR/Physical Chemistry. Crystals.

Abs Jour: Ref Zhur-Khimiya, No 5, 1957, 14530

B-5

Author : I. V. Stepanov, P. P. Feofilov

Inst : -

Title : On Two Types of Luminescence Spectra of Rare Earths in Artificial Fluorite Crystals

Orig Pub: Dokl. AN SSSR, 1956, 108, No 4, 615-618

**Abstract:** Monocrystals of synthetic  $\text{CaF}_2$ , activated by fluorides of rare earths (TR: Pr, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tu;  $\sim 10^{-4}$  g/g) yield two types of luminescence spectra (L), which differ sharply in number and position of the lines. Type II (anomalous) is observed in crystals, grown in reducible conditions (addition to the batch of  $10^{-3}$  g/g of graphite powder). Type I (normal) is prepared after heating the ready crystals in an open hearth at a temperature of 900-1000°. The (L) spectra are independent of excitation and do not change during damping. The absorption spectra of types I and II differ from one another.

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USSR/Physical Chemistry. Crystals.

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Abs Jour: Ref Zhur-Khimiya, No 5, 1957, 14530

**Abstract:** The centers of both types can coexist in a crystal. The conclusion was made that in both cases TR are present in the form of ions of type  $T\text{r}^{+3}$ , but the spectra depend on the closest environment. Crystals of type I are formed as a result of the substitution of one of the eight  $F^-$  ions surrounding  $T\text{r}^{+3}$  by an  $O^{2-}$  ion. The nature of substitution for type II was not established. In natural  $\text{CaF}_2$  crystals, heated in an open hearth at  $600\text{--}700^\circ$ , the brilliance of (L) increases and spectral lines appear of type II (Er, Dy) and I (Sm). Heating at  $900\text{--}1000^\circ$  leads to a second change of the spectrum: the spectra of all TR becomes identical with the type I spectrum of synthetic  $\text{CaF}_2\text{-TR}$ .

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FEOFILOV, P.P.

SSSR / Physical Chemistry. Crystals.

B-5

Abs Jour : Ref Zhur - Khimiya, No 8, 1957, 25922.

Author : V.A. Arkhangel'skaya, P.P. Feofilov.

Inst : Academy of Sciences of USSR

Title : Luminescence Spectra of Crystals of Some Iodides.

Orig Pub : Dokl. AN SSSR, 1958, No 5, 803 - 805

Abstract : The luminescence spectra (LS) of Hg, Pb and Ag iodides consist of series of bands at the temperature of liquid air. The distances between them and their width increase together with the shift towards the long wave region. The relative intensity of the bands depends very much on the conditions, under which the sample has been prepared, and on the excitation intensity. LS of red  $HgI_2$  consists of a narrow band ( $\Delta\lambda$  about 3  $\mu$ ) at about 536  $\mu$  and wide bands at about 565 and 750  $\mu$ . The most short-wave band is shifted about 3  $\mu$  from the most long-wave exciton ab-

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USSR / Physical Chemistry. Crystals.

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Abs Jour : Ref Zhur - Khimiya, No 8, 1957, 25922

Abstract : sorption band towards the long-wave side. LS of PbI<sub>2</sub> consists of a narrow band ( $\Delta\lambda$  about 2 mu) at about 497 mu and wide bands at 515 and 670 mu. Stokes' shift of the narrow band is about 2 mu. There are in LS of AgI a narrow band ( $\Delta\lambda$  about 2 mu) at 432 mu and wide bands at 450, 527, 650 and 780 mu. Stokes' shift is about 3 mu. A similar correspondence of absorption spectra and LS is observed also in case of CdS. The displacement of maxima of narrow radiation bands relatively to the bands of exiton absorption is nearly the half of the band width. It is concluded that the narrow radiation bands are bands of resonance luminescence and that they are caused by the collapse of the exiton state.

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PLUTONIUM

## PRIKHOD'KO, A.P.

24(7) p.3 PHASE I BOOK EXPLOITATION Sov/1363  
 Lvov. Universitet

Materialy X Vsesoyuznogo soveshchaniya po spektroskopii. t. 1:  
 Molekulyarnaya spektroskopiya (Papers of the 10th All-Union  
 Conference on Spectroscopy. Vol. 1: Molecular Spectroscopy)  
 [Lvov] Izd-vo L'vovskogo univ-ta, 1957. 499 p., 4,000 copies  
 printed. (Series: Itst. Fizichnyy sbirnyk, vyp. 3/8/)

Additional Sponsoring Agency: Akademiya nauk SSSR Komissiya po  
 spektroskopii. Ed.: Jazev, S.L.; Tech. Ed.: Saranyuk, T.V.;  
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 Neprerovt, B.S., Doctor of Physical and Mathematical Sciences,  
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 Kornitatskiy, V.G., Candidate of Technical Sciences, Rayskiy, S.M.,  
 Candidate of Physical and Mathematical Sciences, Klimovskiy, L.K.,  
 Candidate of Physical and Mathematical Sciences, Miliyanohuk, V.S.,  
 Candidate of Physical and Mathematical Sciences, and Olauberman,  
 A. Ye., Candidate of Physical and Mathematical Sciences.

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Shpol'skiy, E.V., E.A. Girdzhiyauskayte, and L.A. Klimova.  
 Emission Spectra of Aromatic Hydrocarbons at Low  
 Temperatures

24

Gross, Ye. P., and A.A. Kaplyanskiy. Exciton Pattern  
 of the Spectral Curves for the Intrinsic Photoeffect  
 and the Exciton Luminescence Spectra in Crystals

37

Gross, Ye. P., B.P. Zakharchenya, and N.M. Reynov.  
 Zeeman Effect in the Exciton Spectrum of the  
 Cuprous-oxide Crystal

38

Pozhilov, P.F. Absorption and Luminescence of Bivalent  
 Rare-earth Ions in Synthetic and Natural Fluorite  
 Crystals

39

Padysh, A.N., and I. Ya. Kucherov. Migration and  
 Transfer of Electron-excitation Energy in Anthracene  
 and Naphthalene Crystals

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State Optical Inst  
 in S. I. Vavilov

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Feofilov, P.P.

48-4-18/48

SUBJECT: USSR/Luminescence

AUTHORS: Arkhangel'skaya V. A. and Feofilov P.P.

TITLE: Luminescence of Some "Pure" Salts (Lyuminestsentsiya nekotorykh  
"Chistykh" soley).PERIODICAL: Izvestiya Akademii Nauk SSSR, Seriya Fizicheskaya, 1957, Vol 21,  
#4, p 530 (USSR)ABSTRACT: At the liquid air temperature, luminescence spectra of some  
non-activated salts ( $HgJ_2$ ,  $PbJ_2$ ,  $AgJ$ ,  $CdS$ ) consist of a series  
of bands whose width increases systematically toward the longer  
wavelengths.

The intensity of individual bands in luminescence spectra  
greatly depends on the intensity of exciting light. The in-  
tensity of short wavelength bands rises with excitation inten-  
sity steeper than linear, according to the expression;

$$I \sim E^\gamma$$

where  $\gamma > 1$ , whereas for long wavelength bands  $\gamma \leq 1$ .

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48-4-18/48

TITLE: Luminescence of Some "Pure" Salts (Lyuminestsentsiya nekotorykh "Chistykh" soley).

Narrow luminescence bands of  $HgJ_2$  and CdS monocrystals are fully polarized in a direction perpendicular to the crystal optical axis. Bands with longer wavelength are also polarized partially or fully in the same direction.

The luminescence duration in narrow bands does not exceed  $10^{-6}$  sec. In bands with longer wavelengths it can attain  $10^{-4}$  sec.

Emission spectra, as well as absorption ones, are considered to be of resonance character.

Narrow bands in emission spectra can be ascribed to decay of exciton state, although this interpretation cannot be considered as final. The report was followed by a short discussion.

No references are cited.

INSTITUTION: Not indicated

PRESENTED BY:

SUBMITTED: No date indicated

AVAILABLE: At the Library of Congress.

Card 2/2

Feofilov, P.P.

48-4-40/48

SUBJECT: USSR/Luminescence

AUTHORS: Bonch-Bruyevich A. M., Tishchenko G.A. and Feofilov P.P.

TITLE: Luminescence Duration of Color Centers in Ionic Crystals  
(Dlitel'nost' luminesentsii tsentrov okrashivaniya v ionnykh kristallakh)PERIODICAL: Izvestiya Akademii Nauk SSSR, Seriya Fizicheskaya, 1957,  
Vol 21, #4, p 590 (USSR)ABSTRACT: The application of a new fluorometer "GOI" possessing a high resolution capacity and relatively high sensitivity to light made it possible to investigate the luminescence duration  $\tau$  of complex color centers in ionic crystals of LiF; NaF and CaF<sub>2</sub>. Investigated crystals were colored both photochemically, by means of hard radiation, and in the additive way (CaF<sub>2</sub>).In all cases the luminescence duration at room temperature was of the order of  $10^{-8}$  to  $10^{-9}$  sec and did not depend on the mode of coloring, intensity and wavelength of excitation light.

Two types of color centers were observed in LiF crystals subjected to the action of X-rays. They differed in their

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